



Aerojet General Superfund Site

U.S. Environmental Protection Agency • Region 9 • San Francisco, CA • May 2013

Proposed Plan for Boundary Operable Unit Cleanup

EPA Requests Public Comment on the Proposed Plan for the Boundary Operable Unit of the Aerojet Superfund Site

The United States Environmental Protection Agency (EPA) is seeking public comments on this **Proposed Plan¹ (PP)** for the Boundary **Operable Unit (OU)**. The Boundary OU, also known as OU 6, is one of nine OUs of the Aerojet General Corporation (Aerojet) Superfund Site in Sacramento County, California (Figure 1). This plan proposes actions to address human and ecological health risks and risks to **groundwater** posed by contaminated soil and **soil vapor** within the Boundary OU (Figure 2). In addition, the plan will protect workers and future site residents from risks from contaminated groundwater beneath the Boundary OU that is being investigated and cleaned up as part of other OUs.

The approved plan will be integrated with cleanup plans for the Western Groundwater and Perimeter Groundwater OUs that are designed to achieve final cleanup goals. The approach for this Boundary OU PP is to focus on soil remediation that protects current site workers, future residents and workers, ecological receptors, and groundwater. Wider groundwater remediation is being conducted on an Aerojet site-wide basis. The Central Valley Regional Water Quality Control Board and Department of Toxic Substances Control are supporting State agencies that work closely with EPA and independently oversee cleanup and investigation at Aerojet.

The **public comment period** for this Boundary OU PP begins on May 8, 2013 and ends June 7, 2013 (for

complete information on how to comment, see the back page of this Proposed Plan). You can send your comments to Gary Riley at EPA, postmarked no later than June 7, 2013. EPA has scheduled a public meeting from 7:00 p.m. to 9:00 p.m. on May 15, 2013 at the Rancho Cordova City Hall, 2729 Prospect Park Drive in Rancho Cordova, to present the proposed plan and record verbal comments. Your written or verbal comments are an important part of EPA's evaluation criteria, and you are encouraged to participate. Your input can influence EPA's final decision.

EPA's primary objective for this Proposed Plan is to protect public health and the environment from **contaminants** found in soils and soil gas from sources within the Boundary OU.

Public Meeting

7 p.m. - 9 p.m.
Wednesday, May 15, 2013

Rancho Cordova City Hall
2729 Prospect Park Drive
Rancho Cordova, CA

Comment Period

May 8, 2013 –
June 7, 2013

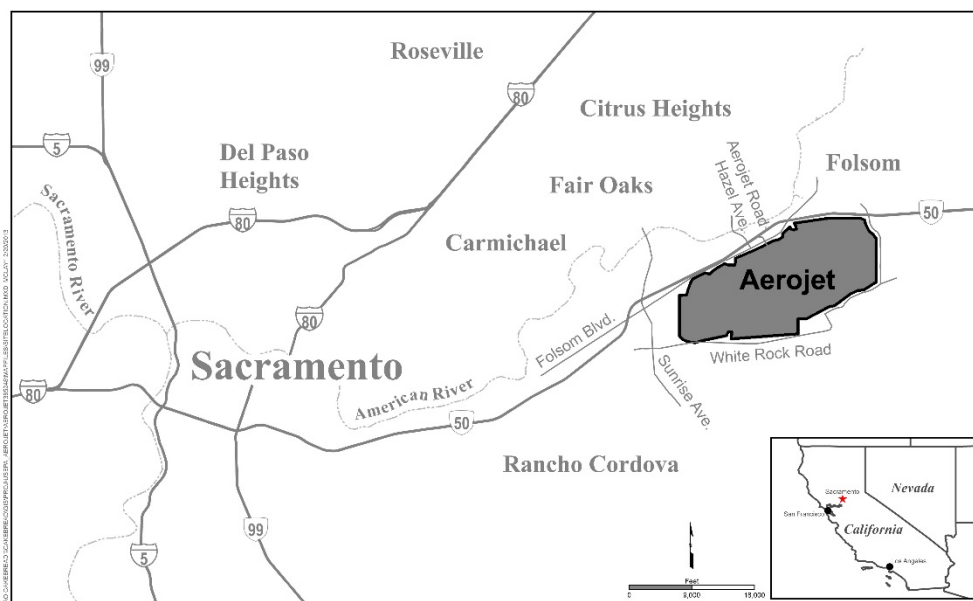


FIGURE 1: Aerojet Property Location

¹ All words in **bold** are defined in the Glossary on Page 18.

This Proposed Plan summarizes the alternatives considered and identifies EPA's preferred remedies for the Boundary OU. It also summarizes the detailed information found in the **Remedial Investigation and Feasibility Study (RI/FS)** reports and other documents contained in the **Administrative Record File (AR)** specifically for the Boundary OU. The AR is available for public review at the information repositories listed on Page 17.

The purpose of this Proposed Plan is to accomplish the following:

1. Inform the community about the history and environmental findings for the Boundary OU
2. Describe the cleanup alternatives evaluated and EPA's preferred alternatives
3. Solicit public comment
4. Explain how the public can become involved

By presenting this Proposed Plan to the public, EPA fulfills the public notice and comment requirements of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, 42 U.S.C. §9617(a), and the **National Contingency Plan (NCP)**, 40 CFR §300.430(f) (2) and (3).

After considering public comments, and in consultation with the California Department of Toxic Substances Control (DTSC)

and the California Regional Water Quality Control Board, Central Valley Region (the Water Board), EPA will make its decision for the cleanup for the Boundary OU. EPA will respond to comments in a responsiveness summary that will be part of the final **Record of Decision (ROD)**. The public will be notified once the ROD is available for review at the site repository (see Page 17), several months after the close of the public comment period.

Site Background

Aerojet acquired the 8,500-acre, relatively isolated former gold-mining area in 1953 (Figure 1). Soil and groundwater have been contaminated by past operating and disposal practices from industrial chemical manufacturing, pesticide manufacturing, and rocket propulsion systems manufacturing and testing operations. Although numerous types of chemicals have been used at the Aerojet site, trichloroethene (TCE), tetrachloroethene (PCE), perchlorate, and N-nitrosodimethylamine (NDMA) are most commonly encountered. TCE and PCE are **volatile organic compounds (VOCs)** used on the Aerojet site for industrial cleaning and degreasing purposes. Perchlorate is a specialized salt used as an oxidizer in solid rocket propellants. NDMA is a **semivolatile organic compound (SVOC)** that was either an impurity in hydrazine-based liquid rocket fuels or was formed during combustion of these fuels. The **contaminants of concern (COCs)** identified for the Boundary OU are listed in Table 1.

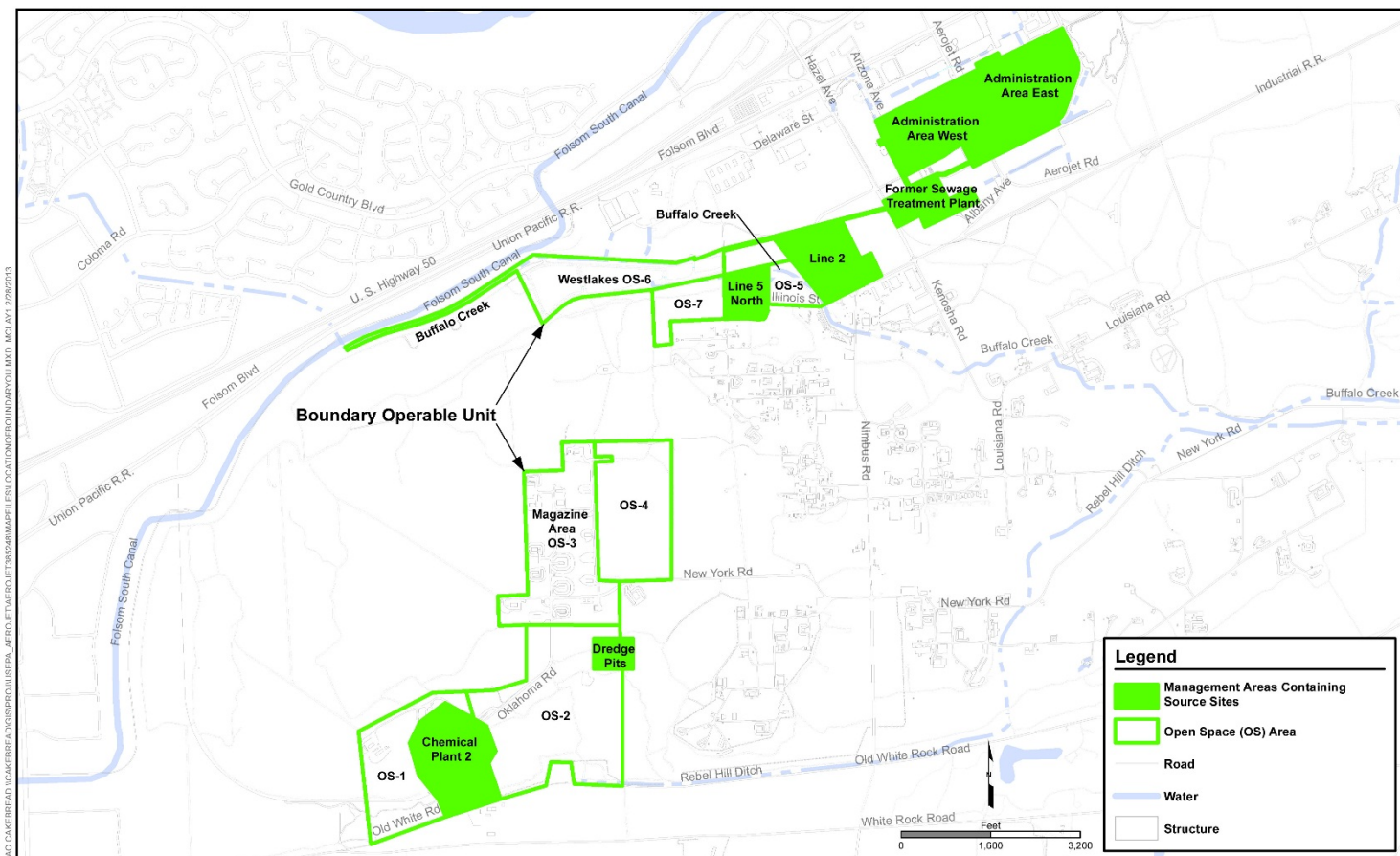


FIGURE 2: Location of Boundary Operable Unit on Aerojet Property

TABLE 1: Summary of Remedial Action Areas*Boundary OU Proposed Plan, Aerojet*

Remedial Action Area	Planned Use	COCs	Media ^a	Risks ^b	Selected Remedy
Administration Area East					
AE-R-1	Commercial	TPH, SVOCs	Soil	G	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-2	Commercial	VOCs, PCBs, Metals	Soil, Soil Vapor	H	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-3	Commercial	VOCs, SVOCs	Soil Vapor, Soil	H	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-4	Commercial	PCBs	Soil	H	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-5	Commercial	PCBs	Soil	H	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-6	Commercial	PCBs, SVOCs	Soil	H	Alternative 3 - Containment/Operational Controls (Capping)
AE-R-7	Commercial	SVOCs, PCBs, TPH	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
AE-R-8	Commercial	PCBs, Metals	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AE-R-9	Commercial	Metals, PCBs, SVOCs	Soil	H, E	Alternative 4 - Source Removal/Reduction (Excavation)
AE-SV-R-1	Commercial	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
AE-SV-R-2	Commercial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
AE-SV-R-3	Commercial	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
AE-SV-R-4	Commercial	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
AE-SV-R-5	Commercial	VOCs	Soil Vapor	G, H	Alternative 4 - Source Removal/Reduction (SVE)
AE-SV-R-6	Commercial	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
AE-SV-R-7	Commercial	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
AE-SV-R-8	Commercial	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
Administration Area West					
AW-R-1	Mixed Use	Metals, PCBs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-2	Mixed Use	Metals, PCBs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-3	Mixed Use	Metals, PCBs, SVOCs	Soil	E, G, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-4	Mixed Use	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-5	Mixed Use	Metals, PCBs, TPH	Soil	E, G	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-6	Mixed Use	Metals, SVOCs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-7	Mixed Use	Metals, SVOCs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-8	Mixed Use	Metals	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-9	Mixed Use	Metals, SVOCs, TPH	Soil	G, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-10	Mixed Use	Metals, SVOCs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-11	Mixed Use	PCBs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)

TABLE 1: Summary of Remedial Action Areas*Boundary OU Proposed Plan, Aerojet*

Remedial Action Area	Planned Use	COCs	Media ^a	Risks ^b	Selected Remedy
AW-R-12	Mixed Use	Metals, SVOCs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-13	Mixed Use	Metals	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-R-14	Mixed Use	Metals	Soil	H	Alternative 3 - Containment/Operational Controls (Capping)
AW-R-15	Mixed Use	PCBs	Soil	G, H	Alternative 4 - Source Removal/Reduction (Excavation)
AW-SV-R-1	Mixed Use	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
Line 2 Region					
L2-R-1	Mixed Use	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-2	Mixed Use	SVOCs, VOCs	Soil, Soil Vapor	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-3	Mixed Use	Perchlorate, TPH	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-4	Mixed Use	Metals, Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation with Soil Flushing and Air Stripping)
L2-R-5	Mixed Use	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation with Soil Flushing and Air Stripping)
L2-R-6	Mixed Use	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-7	Mixed Use	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-8	Mixed Use	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L2-R-9	Mixed Use	Metals, NDMA, Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation with Soil Flushing and Air Stripping)
L2-SV-R-1	Mixed Use	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
L2-SV-R-2	Mixed Use	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
L2-SV-R-3	Mixed Use	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
Line 5 North					
L5-R-1	Residential	Metals, SVOCs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
L5-R-2	Residential	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L5-R-3	Residential	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L5-R-4	Residential	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)
L5-SV-R-1	Residential	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
L5-SV-R-2	Residential	VOCs	Soil Vapor	G	Alternative 4 - Source Removal/Reduction (SVE)
L5-SV-R-3	Residential	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
Buffalo Creek and West Lakes					
BC-R-1	Open Space Drainage	Metals, PCBs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
BC-R-2	Open Space Drainage	Metals, PCBs	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
WL-R-1	Open Space	Perchlorate	Soil	G	Alternative 4 - Source Removal/Reduction (Excavation)

TABLE 1: Summary of Remedial Action Areas*Boundary OU Proposed Plan, Aerojet*

Remedial Action Area	Planned Use	COCs	Media ^a	Risks ^b	Selected Remedy
Magazine Area					
MA-SV-R1	Industrial	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
Chemical Plant 2					
CP2-R-1	Industrial	Metals, PCBs, Pesticides, SVOCs,	Soil	E, H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-2	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-3	Industrial	Metals, PCBs, Pesticides, SVOCs,	Soil	E	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-4	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-5	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-6	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-7	Industrial	PCBs	Soil	E	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-8	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-9	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-10	Industrial	PCBs	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-R-11	Industrial	Metals	Soil	H	Alternative 4 - Source Removal/Reduction (Excavation)
CP2-SV-R1	Industrial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
CP2-SV-R-2	Industrial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
CP2-SV-R-3	Industrial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
CP2-SV-R-4	Industrial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
CP2-SV-R-5	Industrial	VOCs	Soil Vapor	H	Alternative 4 - Source Removal/Reduction (SVE)
CP2-SV-R-6	Industrial	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
Dredge Pit and Eastern Basin					
DPEB-R-1	Industrial	Metals, Pesticides, SVOCs	Soil	E, H	Alternative 3 - Containment/Operational Controls (Backfilling)
DPEB-SV-R-1	Industrial	VOCs	Soil Vapor	H	Alternative 2 - Institutional Controls
^a Impacted media (soil, soil vapor, and/or groundwater) ^b E = ecological risks G = risks to groundwater H = risks to human health Notes: Definitions for the following acronyms can be found on Page 18. COCs = contaminants of concern NDMA = N-nitrosodimethylamine PCBs = polychlorinated biphenyl SVOCs = semivolatile organic compounds TPH = total petroleum hydrocarbons VOCs = volatile organic compounds					

The Aerojet site was proposed for listing on EPA's **National Priorities List (NPL)** in 1982, and it was officially added to the list in 1983. The NPL is a list of the nation's largest and most complex hazardous waste sites. In the mid 1980s, Aerojet installed several **groundwater extraction and treatment (GET)** systems (GETs A, B, D, E, and F) to remove and treat VOCs and NDMA to contain contaminated groundwater near the Aerojet site boundary. GET A was installed in the northeastern portion of the Aerojet property, GET B was installed to the southeast, GETs E and F were installed in the northwest and southwest, and GET D was installed in the northern-central portion of Aerojet. The American River GET began operating in 1999 as an off-property extension of GET D.

In June 1989, the EPA, Department of Health Services, and the Regional Water Quality Control Board signed a **Partial Consent Decree** with Aerojet to conduct (among other requirements) an RI/FS for the site. As part of the 2001 Stipulation and Order Modifying Partial Consent Decree, the site was divided into OUs to expedite remedy implementation and to define the potentially contaminated areas of surface and subsurface soil. About 5,900 acres of the 8,500-acre Aerojet facility are potentially contaminated and the subject of ongoing investigation. EPA responded to community interest in 2001 by forming a Community Advisory Group that meets bi-monthly to discuss the cleanup and provide input to the EPA, DTSC, the Water Board, and to Aerojet.

Over the last several years, EPA and state regulators have overseen a rigorous sampling and evaluation process to determine the potential risks to workers and residents from contaminated groundwater and soils associated with the Aerojet Superfund Site. The investigation also thoroughly examined the potential risks to residents and workers caused by VOC vapors from contaminated groundwater. These measures were taken to ensure protection of public health and the environment during the lengthy cleanup process.

Site Characteristics

The Aerojet site is characterized by a relatively flat topographic surface sloping gently to the west. Most of this topography is dominated by rows of dredge tailings remaining from gold mining operations that began in the early 1900s. The dredge tailings consist of alternating rows of cobble piles separated by low areas filled with silt and clay. The depth of dredging ranged from approximately 10 to 90 feet below ground surface.

The Aerojet-owned property within the Superfund boundary is zoned for industrial use. The facilities that support industrial operations are grouped into manufacturing areas composed of multiple buildings. Large areas of undeveloped land are located within and between the manufacturing areas, and along the property boundaries. The majority of land between active manufacturing areas and the property boundary served as "buffer space" between operations and neighboring properties.

The Aerojet property was designated as a "Special Planning Area" by Sacramento County Ordinance, Title V, Chapter 8,

Article 3 of the Zoning Code of Sacramento County (County of Sacramento, 1993). This ordinance identifies existing permitted uses and "provides a regulatory mechanism for making land use decisions that maintain a safe environment in which the subject property can be used, given the special requirements of the property owner."

Land uses around the Aerojet Site include residential, commercial, industrial, agricultural, and recreational. The largest developed areas are located west, north, and northeast of Aerojet and include the cities of Rancho Cordova and Folsom, and the community of Gold River. These areas have a combined population of approximately 109,000 people.

The Boundary OU, generally located along the northern and western boundary of the Aerojet property, is divided into nine Management Areas (MAs) and seven Open Space (OS) areas (OS1 through OS7) (Figure 2)². The MAs include the Administration Area East & West (Figure 3), Line 2 Region (Figure 4), Line 5 North (Figure 4), Westlakes (Figure 4), Buffalo Creek (Figure 4), Chemical Plant 2 Area (Figure 5), Magazine Area (Figure 5), and the Dredge Pit & Eastern Basin (Figure 5). Open Space areas were not used for active industrial research, production or disposal and did not have identified source areas for release of contamination. The COCs were identified in the Boundary OU RI/FS and are presented in Table 1. All COCs identified in the Boundary OU FS will be addressed during the cleanup actions.

The *Administration Area* is the historical liquid rocket manufacturing area and historical and current administrative area at the Aerojet facility. Potential source areas within the Administration Area are associated with liquid rocket manufacturing and the drainage system extending from the manufacturing buildings. The primary chemicals associated with liquid rocket manufacturing were chlorinated solvents and metals, and these COCs are distributed in various areas. The Administration Area has been subdivided into three areas (Administration Area East, Administration Area West, and the Former Sewage Treatment Plant).

The *Line 2 Region* includes former manufacturing areas, the Drum Storage Area, associated septic systems, and related features such as collection systems, floor drains, sumps, storage areas, drainage ditches, tanks, and septic tanks and leach fields. COCs found in this area include perchlorate and VOCs associated with these former activities.

Line 5 North encompasses three source areas and various other features including sumps, a possible missile test stand, test cells and associated blast areas, a material storage area, and drains associated with former activities conducted at a former engineering test laboratory. The RI/FS identified areas of perchlorate and VOC contamination as COCs in this MA.

² The investigation at Area 39 is not yet complete; therefore, it has been moved for administrative purposes to the Island OU remedial investigation and is no longer included in Boundary OU documents.

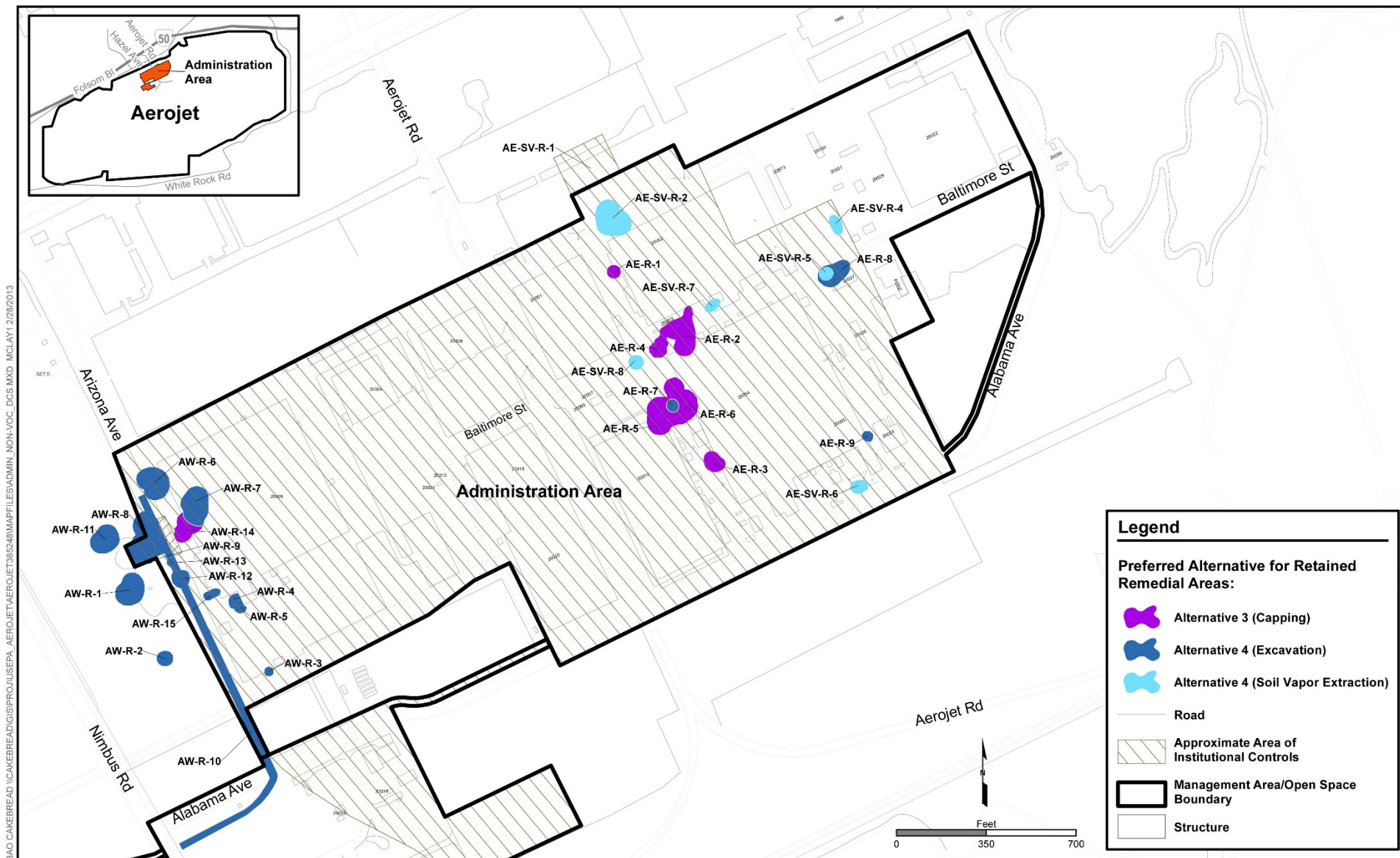


FIGURE 3: Administration Area

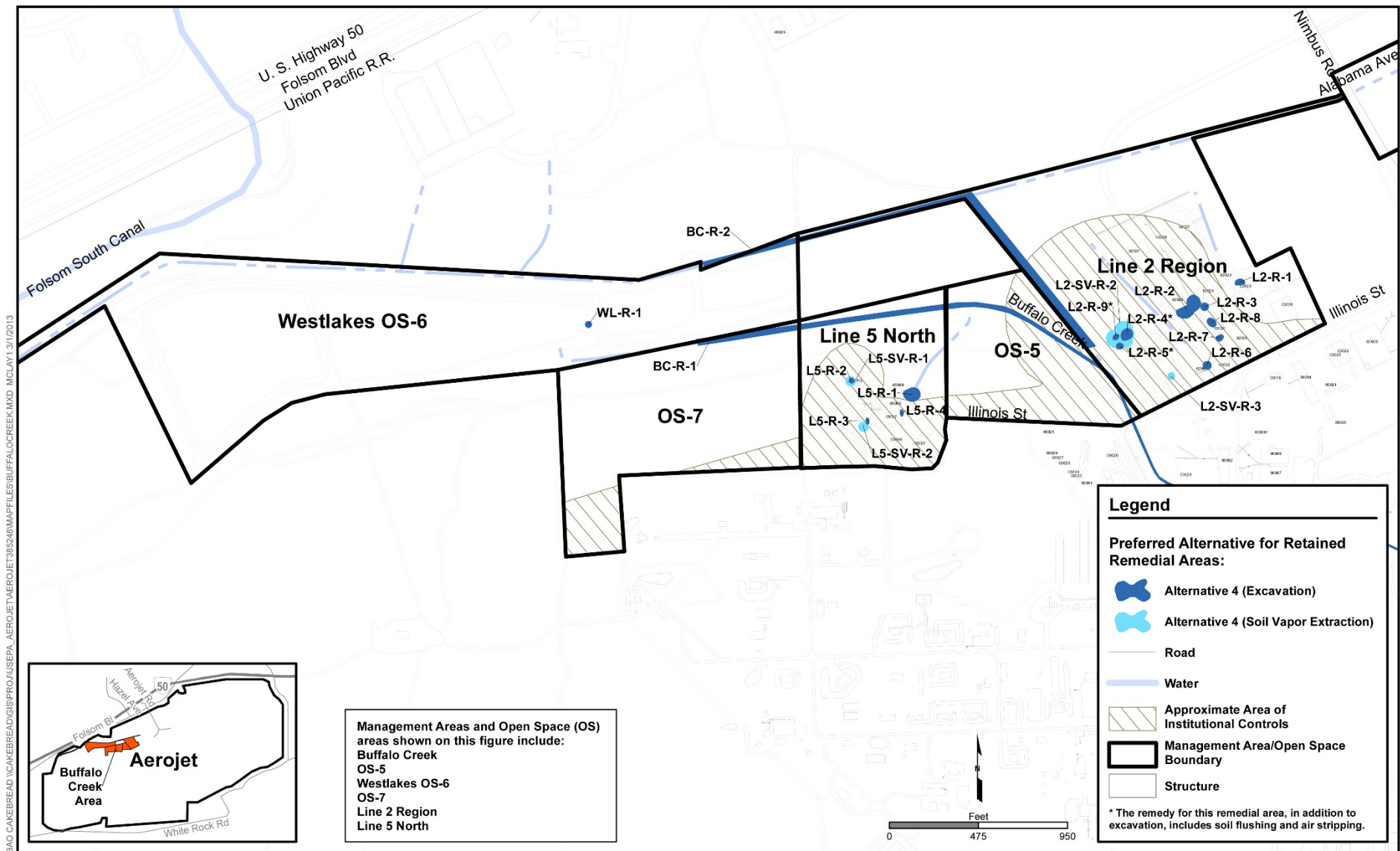


FIGURE 4: Buffalo Creek Area

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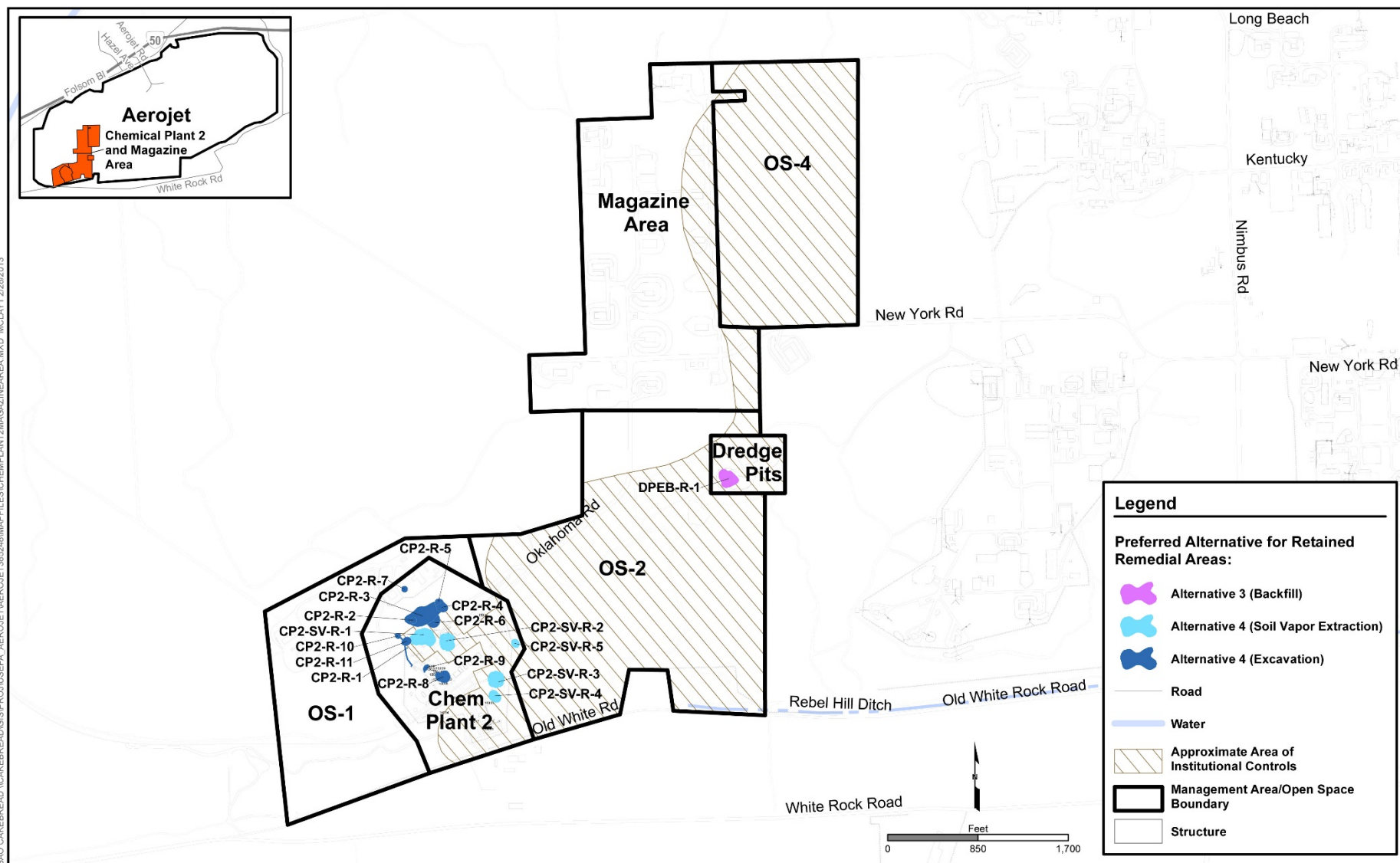


FIGURE 5: Chemical Plant 2 and Magazine Area

While there are no specific sources of contamination in the *Westlakes Area/OS6* and *Buffalo Creek* MAs, these areas receive storm water discharge from many source areas identified as part of the Boundary OU in the RI/FS report.

The *Magazine Area/OS3* consists of storage bunkers, shipping and transfer facilities, and safety shelters. In the Magazine Area/OS3, two septic systems and a former hazardous waste unit were investigated.

Chemical Plant 2 Area: Chemical Plant 2 was originally operated as a nitroplasticizer manufacturing facility by Aerojet. The plant was shut down in 1968 and later reactivated in 1975 by Cordova Chemical Company for other chemical manufacturing activities. Chemicals used included nitroplasticizer processes, solvents, diesel, and oil containing polychlorinated biphenyls (PCBs). High concentrations of VOCs in soil gas in portions of the Chemical Plant 2 area are the only **principal threat wastes** identified in the Boundary OU.

Dredge Pit and Eastern Basin: two dredge pits are located approximately one-half mile northeast of the Chemical Plant 2 Area. The western dredge pit is referred to as the Dredge Pit and the eastern pit is referred to as the Eastern Basin. The Dredge pit reportedly received episodic wastewater disposal from the Chemical Plant 2 area and pesticides were identified as a COC.

Open Space Areas 1, 2, 4, 5, and 7 (OS1, OS2, OS4, OS5, and OS7) are large areas of contiguous land (buffer land between the MAs) within the BOU, not encompassed by defined MAs or source areas, were identified as OS Areas to manage the CERCLA process for these lands. These areas were investigated to evaluate the risk from VOCs and perchlorate in groundwater beneath the OS Area land from upgradient sources that are being addressed in other OUs.

Proposed mixed-use developments overlap with the Administration Area West, Former Sewage Treatment Plant, Buffalo Creek, Westlakes, Line 2 and Line 5 source areas. GenCorp, Aerojet's parent company, does not propose land use changes for Administration Area East, Chemical Plant 2 Area, Dredge Pits & Eastern Basin, or the Magazine Area.

Scope and Role of the Aerojet Project and the Boundary OU

EPA, the Water Board, and DTSC set the highest priority for the entire Aerojet Superfund Site to contain groundwater contamination and prevent further loss of drinking water supplies around the site. The second sitewide priority is to clean up the sources of contamination on the Aerojet property, which are located in parts of the Boundary OU and five additional OUs covering the remainder of the Aerojet Site. The long-term goal for the entire Aerojet Site is to reduce or contain contaminants in the groundwater to levels that allow for beneficial uses, and to clean up the soil to eliminate or control the sources of contamination.

The proposed cleanup for the Boundary OU will eliminate or reduce the potential for human or ecological receptors to be exposed to COCs in soil and soil vapor at concentrations that pose an unacceptable risk. The cleanup will also prevent COCs in Boundary OU soil sources from migrating to groundwater, and provide controls to prevent exposure to VOCs volatilizing from groundwater that is being cleaned up as a part of other OUs. Soil and soil vapor cleanup levels for the COCs for each remedial action area are shown in Tables 2a and 2b. As discussed on Page 6 of this Proposed Plan, groundwater remediation is being addressed on an Aerojet sitewide basis with the various GET facilities as part of the Western Groundwater and Perimeter Groundwater OUs.

This Proposed Plan presents the preferred cleanup plan (or preferred remedy) for the Boundary OU. The RI/FS reports of five other OUs in the source areas must be completed before final remedies are selected for the entire Aerojet Site.

Summary of Site Risk

Human health and ecological risk assessments were performed to identify and estimate potential risks to human health and the environment from contaminated soil, soil vapor, and groundwater. The **human health risk assessment (HHRA)** evaluated potential health effects for both current site workers and future residents that could occupy portions of the site planned for residential development. The HHRA evaluated risk from direct contact with contaminated soils, exposure to surface water, and migration of VOCs from soil vapor and groundwater to indoor and ambient air. The risk assessment also evaluated potential consumption of home-grown produce. The **ecological risk assessment (ERA)** evaluated risks to ecological receptors from exposure to constituents in soil, soil vapor, sediment, and surface water. Using site-specific information, the HHRA and ERA established that several areas within the Boundary OU pose potential risks requiring remedial action.

Risk from cancer-causing contaminants (carcinogens) is defined as the probability of a person getting cancer from a long-term exposure to those carcinogens. This probability is expressed as the number of additional cancers that might occur from exposure to the contamination. EPA's goal is to protect current and future residents, workers, and visitors at Aerojet from increased risks of cancer. EPA seeks to manage potential cancer risks so that they fall within or below a risk management range of one in ten thousand (1×10^{-4}) to one in one million (1×10^{-6}) for the reasonably anticipated future land use.

For contaminants that do not cause cancer but may cause other health effects (noncarcinogens), the **noncancer health risk** is expressed as a Hazard Index (HI). If the HI is less than or equal to 1.0, no adverse health effects are expected. An HI greater than 1.0 indicates an increased risk of adverse health effects. The higher the HI, the more likely adverse health effects could be experienced, especially by people more sensitive to a chemical's effects.

TABLE 2a: Cleanup Levels for Soil
Boundary OU Proposed Plan, Aerojet

COC	Residential Soil CL for the Protection of HH (mg/kg)	Industrial Soil CL for the Protection of HH (mg/kg)	Source	Soil CL for the Protection of GW (mg/kg)	Source	SLERA ESL (mg/kg)	Primary Source
1,1,2,2-PCA	0.56	2.80	RSL	--	--	--	--
4,4'-DDD	--	--	--	--	--	0.021	EcoSSL
4,4'-DDE	--	--	--	--	--	0.021	EcoSSL
4,4'-DDT	--	--	--	--	--	0.021	EcoSSL
Aluminum	--	--	--	430,000	Background Threshold Value (RCRB soils)	pH <5.5	EcoSSL
	--	--	--	540,000	Background Threshold Value (Xerorthent soils)	--	--
Antimony	30	380	CHHSL	600	DLM	0.27	EcoSSL
Aroclor-1248	--	--	--	0.34	DLM	0.0072	LANL
Aroclor-1254	0.09	0.30	CHHSL	0.34	DLM	0.041	LANL
Aroclor-1260	0.09	0.30	CHHSL	0.34	DLM	0.14	LANL
Barium	5,200	63,000	CHHSL	100,000	DLM	110	EcoSSL
Benzo(a)anthracene	0	2	RSL	0.30	DLM	1.1	EcoSSL/High MW
Benzo(a)pyrene	0	0.21	RSL	0.03	DLM	1.1	EcoSSL/High MW
Benzo(b)fluoranthene	0	2	RSL	0.29	DLM	1.1	EcoSSL/High MW
Benzo(k)fluoranthene	2	21	RSL	3	DLM	1.1	EcoSSL/High MW
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	0.02	LANL
Boron	--	--	--	--	--	2	LANL
Cadmium	--	--	--	7	Background Threshold Value (RCRB soils)	0.36	EcoSSL
	--	--	--	12	Background Threshold Value (Xerorthent soils)	--	--
Chromium	--	--	--	5,000	DLM	26	EcoSSL
Chrysene	15	210	RSL	--	--	1.1	EcoSSL/High MW
Copper	--	--	--	--	--	28	EcoSSL
d-BHC	--	--	--	--	--	--	--
Dibenz(a,h)anthracene	0.02	0.21	RSL	--	--	1.1	EcoSSL/High MW
Dieldrin	--	--	--	--	--	0.0049	EcoSSL
Dimethyl phthalate	--	--	--	--	--	10	LANL
Di-n-butylphthalate	--	--	--	--	--	0.011	LANL
Di-n-octyl phthalate	--	--	--	--	--	0.91	LANL
Endrin	--	--	--	--	--	0.0014	LANL
Endrin aldehyde	--	--	--	--	--	0.0014	LANL
Hexavalent chromium	0.29	6	RSL	1,090	Background Threshold Value	0.34	LANL
Ideno(1,2,3-c,d)pyrene	0.15	2.10	RSL	--	--	1.1	EcoSSL/High MW
Iron	55,000	720,000	RSL	--	--	pH<5.0	EcoSSL

TABLE 2a: Cleanup Levels for Soil
Boundary OU Proposed Plan, Aerojet

COC	Residential Soil CL for the Protection of HH (mg/kg)	Industrial Soil CL for the Protection of HH (mg/kg)	Source	Soil CL for the Protection of GW (mg/kg)	Source	SLERA ESL (mg/kg)	Primary Source
Lead	80	320	CHHSL	420	Background Threshold Value (RCRB soils)	11	EcoSSL
	80	320	CHHSL	230	Background Threshold Value (Xerorthent soils)	--	--
Manganese	--	--	--	11,000	Background Threshold Value (RCRB soils)	220	EcoSSL
	--	--	--	15,000	Background Threshold Value (Xerorthent soils)	--	--
Mercury	10	180	RSL	--	--	0.013	LANL
Molybdenum	--	--	--	--	--	0.4	ORNL
Naphthalene	--	--	--	1.40	DLM	29	EcoSSL/Low MW
NDMA	--	--	--	0.0003	DLM	--	--
Nickel	18	20,000	RSL	1,200	DLM	38	EcoSSL
PCE	--	--	--	--	--	0.18	LANL
Perchlorate	--	--	--	0.60	DLM	0.61 (surface soil) 1.17 (subsurface soil)	back-calculated
Phenanthrene	--	--	--	--	--	29	EcoSSL/Low MW
Phenol	--	--	--	--	--	0.03	ORNL
Prowl	2,400	25,000	RSL	--	--	1.285	back-calculated
Selenium	--	--	--	--	--	0.52	EcoSSL
Silver	--	--	--	--	--	4.2	EcoSSL
TCE	--	--	--	--	--	42	LANL
Thallium	--	--	--	25	DLM	1	ORNL
Toluene	--	--	--	--	--	23	LANL
TPH-D	--	--	--	1,000	DLM	--	--
TPH-Mo	--	--	--	5,000	DLM	--	--
Zinc	--	--	--	--	--	46	EcoSSL

Xerorthent soils = These soil types are found in areas of dredge tailings near the American River. The soils formed in material that has a high content of gravels and cobbles derived from mixed rock sources. The material was deposited as tailings during mining activities with slopes ranging from 0 to 50 percent.

RCRB soils = Redding-Corning-Red Bluff soils. Moderately well drained soils that are moderately deep over a cementted hard pan. This unit is found on intermediate and high terraces, terrace remnants, and the side slopes of terraces in the eastern part of Sacramento County. The soils form in alluvium that is derived from mixed rock sources. For more details on Xerorthent or RCRB soil types, see the Boundary OU RI/FS report (Aerojet, 2012).

Notes:

* endrin used as a surrogate for endrin aldehyde

-- A cleanup level was not required because the contaminant did not pose a risk to this particular receptor.

CHHSL = California Human Health Screening Levels (Cal-EPA, 2005; 2010)

CL = cleanup level

TABLE 2a: Cleanup Levels for Soil
Boundary OU Proposed Plan, Aerojet

COC	Residential Soil CL for the Protection of HH (mg/kg)	Industrial Soil CL for the Protection of HH (mg/kg)	Source	Soil CL for the Protection of GW (mg/kg)	Source	SLERA ESL (mg/kg)	Primary Source
COC = contaminant of concern DLM = designated level methodology (<i>Designated Level Methodology for Waste Classification and Cleanup Level Determination [RWQCB, 1989]</i>) ESL = ecological screening levels (Aerojet, 2012) mg/kg = milligrams per kilogram RCRB = Redding-Corning-Red Bluff RSL = Regional Screening Level (EPA, 2012) SLERA = screening level ecological risk assessment							

TABLE 2b: Cleanup Levels for Ambient Air
Boundary OU Proposed Plan, Aerojet

COC	Residential Use CL (µg/m³)	Risk Basis	Industrial Use CL (µg/m³)	Risk Basis
Benzene	0.31	Cancer 10 ⁻⁶ risk level	1.60	Cancer 10 ⁻⁶ risk level
Chloroform	0.11	Cancer 10 ⁻⁶ risk level	0.53	Cancer 10 ⁻⁶ risk level
cis-1,2-Dichloroethene	36.50	Non-cancer	51	Non-cancer
1,2-Dichloroethane	0.094	Cancer 10 ⁻⁶ risk level	0.47	Cancer 10 ⁻⁶ risk level
1,1,1-Trichloroethene	5,200	Non-cancer	22,000	Non-cancer
Trichloroethene	0.43	Cancer 10 ⁻⁶ risk level	3	Cancer 10 ⁻⁶ risk level
Tetrachloroethene	0.41	Cancer 10 ⁻⁶ risk level	2.1	Cancer 10 ⁻⁶ risk level
Vinyl Chloride	0.16	Cancer 10 ⁻⁶ risk level	2.8	Cancer 10 ⁻⁶ risk level
Notes: Protective soil vapor levels in subsurface soil are decreased by location- and depth-specific attenuation factors. CL = cleanup level COC = contaminant of concern VOC = volatile organic compound µg/m3 = micrograms per cubic meter				

The ERA considered potentially exposed ecological receptors in each Management Area, including: terrestrial plant, soil invertebrate and aquatic communities; and bird, mammal and reptile populations. Chemical data from the Boundary OU RI were compared to ecological screening levels developed for the ERA, and considered potential ecological COCs if they exceeded these levels. Agency-recognized screening levels were used to conservatively represent exposure concentrations that are protective of all receptors potentially exposed to a given medium. PCBs, metals, VOCs, and pesticides were the primary drivers of risks to ecological receptors.

Areas potentially requiring cleanup were identified by calculating the human health and ecological risks under the current and planned future land use and by estimating the potential risks to groundwater and surface water. A detailed description of the modeling and procedures used to estimate the risks can be found in the Human Health and Ecological Risk Assessment, which is in Volume 2 of the Boundary OU RI/FS (Aerojet, 2012).

These areas were then evaluated to determine if cleanup was required. The following criteria, along with professional judgment, were used to determine if a contaminated area (identified by the estimated risks) required cleanup: =

- If the potential human health risk was just above 1 x 10⁻⁶, the HI was greater than 1.0, or an estimated blood lead level was greater than 10 micrograms per deciliter, then the area may have been recommended for cleanup evaluation.
- If ecological risk exceeded screening levels and the Screening Level Ecological Risk Assessment recommended further evaluation for an action, then the area was recommended for cleanup.
- If the risk of contaminating the groundwater was considered moderate, then the area may have been recommend for cleanup, depending on the compound mobility and solubility, and depth and extent of contamination.

- If the risk to groundwater was considered high, the area was recommended for cleanup.
- If the risk to groundwater was based on the concentrations of total petroleum hydrocarbons (TPH) as diesel or TPH as motor oil, then the area was only recommended for retention if the concentrations were increasing, or if TPH was encountered at depth and had already impacted the groundwater.

The areas requiring remedial action within the Boundary OU are listed on Table 1 and shown on Figures 3 through 5. These areas pose a potential risk to human health, the environment, and/or groundwater. A total of 49 areas require remediation of contaminated soils; 23 areas require remediation of contaminated soil vapor in the **vadose zone**; and 3 areas require remediation of contaminated soil and soil vapor. It is the EPA's current judgment that the Preferred Alternatives identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, are necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

Future domestic use of groundwater will be prohibited in the Boundary OU due to wider scale groundwater contamination investigated and undergoing remediation under other OUs at the Aerojet Site. Therefore, the only risk posed by groundwater is from VOC volatilization into indoor air and subsequent inhalation. All groundwater areas exceeding a 5 micrograms per liter TCE concentration contour plus a 100-foot buffer zone were retained as secondary sources to assess potential mitigation of risk to residential indoor air. This boundary was chosen to encompass those areas where volatilization of TCE from groundwater using conservative modeling assumptions showed the potential for unacceptable risk. Other VOCs that could potentially pose a risk to indoor air were also evaluated. A complete list of areas not requiring cleanup can be found in the Boundary OU RI/FS (Aerojet, 2012).

Remedial Action Objectives

The **Remedial Action Objectives (RAOs)** describe what the proposed remediation effort is expected to accomplish. Soil, soil vapor, and groundwater media are of concern for the Boundary OU remedial action. The following RAOs have been identified by EPA for soil and soil vapor:

- Prevent exposure to COCs in soils that pose an unacceptable risk for present and future workers and residents on the property and ecological receptors on the property.
- Prevent migration of COCs to groundwater that could impair beneficial uses and to be consistent with current and future sitewide groundwater remedies.
- Prevent exposure to VOCs in ambient air at levels exceeding the EPA health-based ambient air screening levels for the current and planned future land use.

Summary of Remedial Alternatives

The remedial alternatives developed for the Boundary OU were intended to address the range of site conditions and contaminant types. The following four alternatives were considered the most viable options and include:

- Alternative 1: No Action
- Alternative 2: Institutional Controls (ICs)
- Alternative 3: Containment/Operational Controls
- Alternative 4: Source Removal/Reduction

The No Action alternative is required by law to be considered and serves as a baseline for comparison to the other alternatives. The four alternatives for Boundary OU were evaluated using the nine criteria shown on Figure 6, except for the community acceptance criterion, which is being assessed with this Proposed Plan. For an alternative to be considered as a possible final remedy, it must meet EPA's two threshold criteria, which are (1) to protect human health and the environment and (2) to comply with specific state and federal regulations known as **Applicable or Relevant and Appropriate Requirements (ARARs)**. The alternatives are described in detail in the Boundary OU RI/FS and are summarized as follows:

Alternative 1 – No Action: CERCLA and the NCP require the evaluation of a No Action alternative to establish a basis for comparison with other alternatives. No remedial activities would be implemented under this alternative, and the No Action alternative does not reduce risk to human health or the environment.

Alternative 2 – Institutional Controls (ICs): ICs would be used to eliminate or limit exposure pathways to humans where levels of COCs would not allow for unrestricted use and unlimited exposure. Alternative 2 would restrict land use such that property may not be used for sensitive uses such as single family homes, daycare centers, healthcare centers, or schools. These restrictions would apply to property overlying areas of identified soil contamination, including areas where volatilization of VOCs from groundwater may present an unacceptable risk.

Some of the ICs (not specific to sources but related to groundwater) would be applied generally within Boundary OU (and potentially to large portions of the Aerojet site that include not only Boundary OU, but other OUs). Other ICs would be applied to portions of the MAs within Boundary OU. The IC mechanisms that may be used for Boundary OU may include governmental controls (e.g., ordinances and land use restrictions), proprietary controls (e.g., environmental covenants or easements), and informational devices (e.g., deed notices).

Alternative 3 – Containment: Alternative 3 would consist of containment by placing capping materials (pavement, a gravel layer, etc.) over areas with chemicals posing potential risks above commercial/industrial levels and maintaining existing barriers to prevent exposure to COCs. This alternative would include developing and implementing institutional controls

(Alternative 2) and engineering controls to reduce or prevent human exposure to contaminated vapors that may be present in existing or future buildings. This alternative also allows for placement of less permeable cap materials over those soil sources that could potentially migrate to groundwater and impair beneficial use.

Alternative 4 – Source Removal/Reduction: Alternative 4 would include removing source materials to reduce the COC concentrations to levels that would allow for restricted or unrestricted use. Methods to implement Alternative 4 are excavation and offsite disposal of soil containing contaminant concentrations above levels acceptable for unrestricted use, or **soil vapor extraction (SVE)** of soil containing VOCs. Soil flushing (with air stripping to remove VOCs also present in these soils) may be employed as a treatment technology to remove perchlorate from soils in areas where the risks to groundwater are high, but excavation is infeasible due to depth.

Evaluation of Alternatives










The alternatives have been evaluated against eight of the EPA's nine evaluation criteria. The ninth criterion, which is community acceptance, will be evaluated following the community response to this Proposed Plan for Boundary OU.

Federal regulations require that Superfund remedies remain protective of human health and the environment over time and that they minimize untreated waste. EPA expects to use treatment or removal to address the principal threats and to use engineering controls (such as containment) for low-level, long-term threats or for situations where complete treatment is impractical. ICs (such as restrictions on land or water use) may be used to supplement treatment and engineering controls for long-term management but are not substitutes for practical, active response measures. EPA regulations also anticipate prevention of further exposure of human and ecological receptors to contaminants, the potential spread of the contaminant plume, and returning groundwater to beneficial uses within a timeframe that is reasonable, given the nature and extent of the contamination at Aerojet.

Alternatives were evaluated for application to each remedial action area. The No Action (Alternative 1) for Boundary OU sources is not a viable remedy because it does not meet either of EPA's threshold criteria, overall protection of the environment and compliance with ARARs. Under Alternative 2 (Institutional Controls), risks could be reduced and controlled through implementation, monitoring, and enforcement of ICs that would only allow land uses compatible with the types of residual chemicals present at levels that could pose an unacceptable risk. However, this alternative would not prevent migration from Boundary OU sources to groundwater, and does not satisfy the preference for treatment. Alternative 3 (Containment) would protect current and future site workers from exposure to residual soil and soil vapor contamination using engineered controls such as caps or barriers. However, these methods may not prevent migration to groundwater and do not satisfy the preference for treatment. Alternative 4 (Source Removal/Reduction) would best comply with the threshold

Figure 6


























National Contingency Plan Criteria for Evaluating Remedial Alternatives and How the Alternatives Meet the Criteria

<p>1 Overall Protectiveness of Human Health and the Environment</p> <p>Determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.</p>	
<p>2 Compliance with State and Federal Environmental Requirements</p> <p>Evaluates alternatives for compliance with environmental protection requirements.</p>	
<p>3 Long-term Effectiveness</p> <p>Considers an alternative's ability to maintain reliable protection of human health and the environment after implementation.</p>	
<p>4 Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment</p> <p>Evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.</p>	
<p>5 Cost</p> <p>Weights the benefits of a particular alternative against the cost of implementation.</p>	
<p>6 Short-term Effectiveness</p> <p>Addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period, until cleanup goals are achieved.</p>	
<p>7 Implementability</p> <p>Refers to the technical and administrative feasibility of the alternative, including the availability of materials and services needed to implement a particular option.</p>	
<p>8 State Acceptance</p> <p>Considers whether the state favors or objects to any of the alternatives based on the available information.</p>	
<p>9 Community Acceptance</p> <p>Indicates whether community concerns are addressed by the alternative and whether the community has a preference for an alternative. Although public comment is an important part of the final decision, the EPA must balance community concerns with all the previously mentioned criteria.</p>	

criteria for those remedial action areas where feasible. Long-term risk would be permanently managed by removing contaminated soil through excavation and/or treating VOCs using SVE. The application of SVE would satisfy the preference for treatment. All of the Alternatives meet the Short-Term Effectiveness and Implementability Criteria.

The overall evaluation of the four alternatives is presented graphically in Table 3. A more thorough and detailed analysis can be found in the Boundary OU RI/FS report available at the information repositories.

TABLE 3: Evaluation of Alternatives
Boundary Proposed Plan, Aerojet

Criteria	Alternative 1 No Action	Alternative 2 Institutional Controls	Alternative 3 Containment/ Operational Controls	Alternative 4 Source Removal/ Reduction
Overall Protection of Human Health and the Environment	 May be protective for areas with low risk.	 Not protective of groundwater for retained areas with identified risk to groundwater.	 Risk of exposure would be reduced or eliminated.	 Risk would be reduced. Is the most protective.
Compliance with ARARs	 May comply for areas with limited contamination.	 May not comply for retained areas with identified risk to groundwater or with PCB contamination.	 May not comply for retained areas with identified risk to groundwater or with PCB contamination.	 Would comply.
Long-Term Effectiveness and Permanence	 None	 Relies on institutional controls alone to prevent exposure.	 Engineered barriers and institutional controls would prevent exposure.	 Risk would permanently be reduced through removal.
Reduction of Toxicity, Mobility, or Volume through Treatment	 Would not satisfy the preference for treatment.	 Would not satisfy the preference for treatment.	 Would not satisfy the preference for treatment.	 SVE would satisfy the preference for treatment.
Short-Term Effectiveness	NA	 No short-term risks to workers or the community.	 Short-term risks to workers and/or the community could be managed.	 Short-term risks to workers and/or the community could be managed.
Implementability	NA			
Cost (Present Worth 30 Years)	\$0	\$100,000 for Boundary OU	Admin Area = \$5.16M WLLO = \$0.18M Magazine Area = NA Chemical Plant 2 = \$0.15M	Admin Area = \$4.50M WLLO = \$4.76M Magazine Area = NA Chemical Plant 2 = \$0.97M
State Acceptance	CA Department of Toxic Substance Control & CA Central Valley Regional Water Quality Control Board concurred with EPA’s preferred alternatives.			
Community Acceptance	Community acceptance of the preferred alternatives will be evaluated after the public comment period.			
 = Meets Criterion  = Partially meets criterion  = Does not meet criterion				
WLLO = Consists of the Westlakes, Line 2 Region, Line 5 North, and Open Space Areas 5, 6, and 7				

Preferred Alternatives

For non-VOCs presenting a risk to human health in shallow soils, the analysis concluded the preferred option was Alternative 4 (excavation) for those areas planned for mixed use or residential use. Alternative 3 (containment) was selected for industrial areas where excavation is not feasible due to the presence of building, utilities, or other impediments. For COCs presenting a risk of migrating to groundwater, excavation or containment was selected for deeper contamination if excavation was not feasible. The preferred alternative for VOCs in soil and soil gas was Alternative 4, using SVE to reduce risks to human health and to prevent degradation of groundwater. Three remedial action areas where soils at depth present a high risk to groundwater (L2-R-4, 5, 9) would reduce the concentration of COCs using soil flushing.

The Preferred Alternatives for each remedial action area in Boundary OU are presented in Table 1 and shown on Figures 3 through 5. While EPA is presenting its preferred alternatives for each remedial action area within Boundary OU, public response to this Proposed Plan can change what EPA is proposing. The estimated 30-year present worth cost for implementing the preferred alternatives, including OU-wide ICs, is \$12.5M. The State of California supports the preferred alternatives for cleanup of soil and soil vapor sources. The preferred alternatives will remove or control sources of contamination

from Boundary OU source areas to protect current and future human and ecological receptors, as well as prevent migration from these sources to groundwater at concentrations that may impair beneficial use.

Based on information currently available, the lead agency believes the Preferred Alternatives meet the threshold criteria and provides the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria. EPA expects the Preferred Alternatives to satisfy the following statutory requirements of CERCLA §121(b): 1) protect human health and the environment; 2) comply with ARARs; 3) be cost-effective; 4) utilize permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable; and 5) satisfy the preference for treatment as a principal element.

Community Advisory Group

The Community Advisory Group for the Aerojet Superfund Site meets bimonthly to exchange information with regulatory agencies and Aerojet on site issues. This meeting includes the discussion of community concerns about the investigation and cleanup of Aerojet. To get further information on this group, contact Janis Heple, Chairperson, at (530) 757-8602. A list of the site repositories follows.

Site Repositories

Sacramento Central Library

8281 I Street
Sacramento, CA 95814
(916) 264-2700

California State University

Sacramento Library (Reference Desk)
2000 State University Drive East
Sacramento, CA 95819-6039
(916) 278-5673

EPA Superfund Records Center

95 Hawthorne Street, 4th floor
San Francisco, CA 94105
(415) 820-4700

For more information on the Aerojet site and related documents
visit the web page at www.epa.gov/region09/Aerojet

Glossary

Administrative Record File (AR) – A compilation of documents that forms the basis for selecting a CERCLA response action for the site.

Applicable or Relevant and Appropriate Requirement – Standards, requirements, criteria, or limitations under federal or more stringent state environmental or facility siting laws that are applicable to the proposed cleanup of the site or, if not applicable, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited for that site.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) – Public law of 1980, amended in 1986, covering investigation, funding, and implementation for site cleanup. 42 U.S.C. §§ 9601-9675. Also known as Superfund.

Contaminant – Any chemical, biological, or related substance that has an adverse effect on human health or the ecological environment.

Contaminant of concern (COC)—A contaminant present at concentrations high enough to present a risk to human health or ecological receptors.

Ecological Health Risk Assessment (ERA) - A study based on the results of an RI to determine the extent to which chemical contaminants found at a site pose a risk to the environment.

Feasibility Study (FS) – A study specified by the NCP that develops and evaluates options for cleaning up a contaminated site.

Groundwater – A supply of water found below the ground surface, usually in aquifers.

Groundwater Extraction and Treatment System (GET) – A system of wells, pipelines, and water treatment units used to remove contaminated water from the aquifer and control the spread of contaminants. The treatment units vary with the types and concentrations of contaminants.

Human Health Risk Assessment (HHRA) - A study based on the results of an RI to determine the extent to which chemical contaminants found at a site pose a risk to public health.

Management Area (MA) An area of the Boundary Operable Unit used to group similar past industrial operation and disposal areas for investigation and potential cleanup.

National Contingency Plan (NCP) – Regulations that account for discharges of oil and releases of hazardous substances, pollutants, and contaminants so that responses to these discharges and releases can be accomplished. 40 Code of Federal Regulations, Part 300.

National Priorities List (NPL) - EPA's published list of the highest priority hazardous waste sites in the United States for investigation and cleanup, which are subject to the Superfund program.

Noncancer health risk—A health risk that does not result in cancer and may include kidney disease, headaches, dizziness, and anemia.

Open Space (OS) An area of the Boundary Operable Unit that did not have identified industrial or waste disposal activities.

Operable Unit (OU) – At large or complex sites, the remediation may be broken into two or more parts or pieces, each of which is designated an Operable Unit and is numbered consecutively (e.g., OU1, OU2, etc.).

Partial Consent Decree – A judicially enforceable agreement between EPA and a potentially responsible party or parties (PRPs) that requires the PRP to perform specific activities leading to a cleanup of the site.

Principal Threat Waste – Source materials (e.g., contaminated soil) considered to be highly toxic or highly mobile that generally cannot be reliably contained and or would present a significant risk to human health or the environment should exposure occur.

Proposed Plan – A proposal required by the NCP for remediation of part or all of a site after an RI/FS is completed. The Proposed Plan is provided to the public for comment.

Public Comment Period – The public comment period is the time during which EPA accepts comments from the public on proposed actions and decisions.

Record of Decision (ROD) – Decision document required by the NCP that specifies a selected remedy for all or part of a CERCLA site after public comment on the proposed plan.

Remedial Action Objective (RAO) – Specific goals for protecting human health and the environment.

Remedial Investigation (RI) – A process specified by the NCP for investigating the nature and extent of contamination at a site.

Semivolatile Organic Compound (SVOC) - Organic compounds that evaporate into the atmosphere more slowly than VOCs do. Common SVOCs include NDMA, polycyclic aromatic hydrocarbons, polychlorinated biphenyls, and a number of pesticides and herbicides. SVOCs are not as volatile as VOCs.

Soil Vapor - Air between soil particles that may be contaminated by vaporized contaminants in the soil.

Soil Vapor Extraction (SVE) - A method of treating soil contaminants by extracting contaminated soil vapor using perforated underground pipes connected to vacuum pumps.

Vadose Zone – The vadose zone is the area between the land surface and the water table.

Volatile Organic Compound (VOC) – Organic compounds that easily evaporate into the atmosphere. VOCs include TCE, PCE, and chloroform.

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EPA Requests Public Comment on the Proposed Plan for the Boundary Operable Unit of the Aerojet Superfund Site

How to Comment

The United States Environment Protection Agency (EPA) is conducting a **public comment period from May 8, 2013 to June 7, 2013**. EPA encourages the public to comment on the enclosed Boundary OU Proposed Plan verbally at the formal public meeting on May 15 at 7pm located at the Rancho Cordova City Hall, 2729 Prospect Park Dr., Rancho Cordova and/or in writing (fax or mail), postmarked no later than June 7, 2013, to Gary Riley (see contact information below).

Contact Information

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United States Environmental Protection Agency
Region 9
75 Hawthorne Street (SFD-6-3)
San Francisco, CA 94105
Attn: Jackie Lane (Aerojet 05/13)

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